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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/918,474	08/01/2001	Karl T. Chuang	11157-33	3100

7590

03/03/2003

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EXAMINER

PRICE, ELVIS O

ART UNIT

PAPER NUMBER

1621

DATE MAILED: 03/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/918,474

Applicant(s)

CHUANG ET AL.

Examiner

Elvis O. Price

Art Unit

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 14-29 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12 and 13 is/are allowed.
- 6) ☒ Claim(s) 1 and 4-11 is/are rejected.
- 7) ☒ Claim(s) 2,3 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7 and 8. 6) ☐ Other:

Art Unit: 1621

DETAILED ACTION

1. Claims 1-29 are pending in the application.
2. Applicants' election, without traverse, of claims 1-13 in Paper No. 10 is acknowledged. Claims 14-29 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a non-elected invention, there being no allowable generic or linking claim. Applicants reserve the right to file a divisional application drawn to the non-elected subject matter.

Priority

Applicants' claim for domestic priority under 35 U.S.C. 119(e) is acknowledged. However, a statement reading "This application claims the benefit of U.S. Provisional Application No. 60/261,203, filed 1/16/2001", should appear as the first sentence of the specification.

Information Disclosure Statement

The information disclosure statements, filed 5/14/02 and 6/17/02 comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609. They have been placed in the application file, and the information referred to therein have been considered as to the merits.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith, Jr. et al. {US Pat. 4,982,022}.

Applicants claim a process for the production of alcohols, comprising (a) subjecting an olefin to a hydration reaction with water to form a reaction product including the corresponding alcohol, the olefin having a carbon chain of 2 to 12 carbon atoms, the carbon chain being selected from a linear chain and a branched chain, the reaction being conducted in the presence of a solid state olefin hydration catalyst, the temperature and the pressure of the hydration reaction being selected so that the olefin is largely in a vapour phase and the alcohol is in the liquid phase, the olefin being in a molar excess when compared with water; and (b) simultaneously recovering the alcohol as a substantially anhydrous liquid.

Smith, Jr. et al. teach a process for the production of an alcohol (tertiary butyl alcohol), via catalytic distillation, and the simultaneous recovery of the said alcohol as a substantially anhydrous liquid comprising, subjecting an olefin (isobutene; 4 carbon atoms; bp = -6.9°C) to a hydration reaction with water to form a reaction product including the corresponding alcohol (tertiary butyl alcohol; bp = 82°C) in the presence of a solid state olefin hydration catalyst (acid cation exchange resin: amberlyst 15). (see Example 2 and Table III). The hydration reaction is carried out at temperatures and pressures such that the olefin is in the vapour phase and the alcohol is in the liquid phase (see the standard process in Table III: Catalyst zone temp. is 165°F which equals 74°C). Smith, Jr. et al. teach that the reaction temperature is from 120° to 300°F (49° to 149°C) and the pressure is from 15 psig to 300 psig (0.1 MPa to 2 MPa) (see

Art Unit: 1621

Col. 3, lines 56-62). The difference between the presently claimed invention and what is taught by the Smith, Jr. et al. reference is that the Smith, Jr. et al. reference is silent about the olefin being in molar excess when compared with water. However, Smith, Jr. et al. teach that the amount of water must be controlled because too much water will cause the product alcohol to contain water and also decrease the reaction rate relative to the amount of excess water (see Col. 2, lines 13-20).

It would have been *prima facie* obvious to one having ordinary skill in the art, at the time the invention was made, to produce alcohols as presently claimed because Smith, Jr. et al. teach a process for the production of an alcohol (tertiary butyl alcohol), via catalytic distillation, and the simultaneous recovery of the said alcohol as a substantially anhydrous liquid comprising, subjecting an olefin (isobutene; 4 carbon atoms) to a hydration reaction with water to form a reaction product including the corresponding alcohol (tertiary butyl alcohol) in the presence of a solid state olefin hydration catalyst (acid cation exchange resin: amberlyst 15). (see Example 2 and Table III).

One having ordinary skill in the art, desiring to obtain the optimum results (increased conversion of reactants, yield, selectivity and purity of the desired product(s)) from the Smith, Jr. et al. process of producing alcohols, would have been motivated to decrease the amount of the water used in the hydration reaction (1:1 or less than a 1:1 molar ratio of water to olefin) so as to eliminate water from the product alcohol(s) while increasing the reaction rate. Therefore, the instantly claimed invention would have been obvious to one having ordinary skill in the art.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Claim 6 recites the limitation "the feed ratio" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Allowable Subject Matter

Claims 2 and 3 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The subject matter of claim 2 is unobvious over the prior art of record because the prior art of record does not teach or suggest a process for producing alcohols, as presently claimed, wherein a catalyst with hydrophobic properties is used in the hydration reaction.

The following is a statement of reasons for the indication of allowable subject matter: Claims 12 and 13 are unobvious over the prior art of record because the prior art or record does not teach or suggest a process for producing alcohols, as presently, claimed, wherein a solid phase hydrophobic olefin hydration catalyst is disposed within the hydration column in two separate spaced apart catalytic beds.

Art Unit: 1621

Oath/Declaration

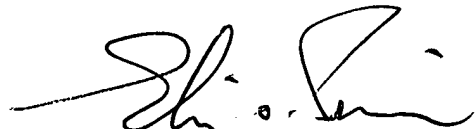
The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because: Applicants claim to the benefit of the provisional application 60261203, filed 1/16/01, under Title 35 of United States Code 120 is incorrect. Instead, benefit to the provisional application should have been claimed under Title 35 of United States Code 119(e).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elvis O. Price whose telephone number is 703 605-1204. The examiner can normally be reached on 8:30 am to 5:00 pm; Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 703 308-4532. The fax phone numbers for the organization where this application or proceeding is assigned is 703 308-4556 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-1235.



Elvis O. Price

February 26, 2003